

CLAIMS

WHAT IS CLAIMED IS:

Sub B1

1. A film-forming composition comprising a continuous aqueous phase and a dispersed phase, the dispersed phase comprising (i) a particulate polymer or emulsified liquid prepolymer, and (ii) a coalescent aid comprising an ester having the formula $RCOOX$ wherein R and X are independently hydrocarbyl or substituted hydrocarbyl and at least one of R and X comprises at least two unsaturated carbon-carbon bonds.

2. The film-forming composition of claim 1 wherein R and X independently comprise about 1 to about 30 carbon atoms.

3. The film-forming composition of claim 1 wherein R and X independently comprise about 1 to about 30 carbon atoms and, in combination, contain no more than about 35 carbon atoms.

4. The film-forming composition of claim 1 wherein R and X each contain an unsaturated carbon-carbon bond.

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5. The film-forming composition of claim 1 wherein R comprises at least two unsaturated carbon-carbon bonds in conjugation.

Sub B2
6. The film-forming composition of claim 1 wherein R or X is substituted hydrocarbyl and the hydrocarbyl substituent is selected from the group consisting of ketones, esters, alcohols, amides, halogens, urea, urethane, and nitrile substituents.

7. The film-forming composition of claim 1 wherein the ester is prepared by the transesterification reaction between a fatty acid and a glycol.

8. The film-forming composition of claim 1 wherein the ester is an ester derived from a fatty acid of soybean oil, canola oil, or linseed oil.

Sub B2 9. The film-forming composition of claim 1 wherein the ester is an ethylene glycol monoester derived from a fatty acid of soybean oil.

Sub A2 10. The film-forming composition of claim 1 wherein the ester is an ethylene glycol monoester derived from a fatty acid of soybean oil.

Sub B2 11. The film-forming composition of claim 1 wherein the ester is a propylene glycol monoester derived from a fatty acid of soybean oil.

Sub B2 12. The film-forming composition of claim 1 wherein the ester is a dipropylene glycol monoester derived from a fatty acid of soybean oil.

13. The film-forming composition of claim 1 wherein the ester is a methyl ester derived from a fatty acid of soybean oil.

12 14. The film-forming composition of claim 1 wherein the fatty acid is a fatty acid derived from soybean oil.

13 15. The film-forming composition of claim 1 wherein the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

Sub B3 16. The film-forming composition of claim 1 wherein the weight of the ester is about 0.1 % to about 4 % of the weight of the particulate polymer or liquid pre-polymer.

15 17. The film-forming composition of claim 1 wherein the continuous aqueous phase constitutes at least about 20 wt.% of the film-forming composition.

Sub B4 18. The film-forming composition of claim 17 wherein the ester is an ester derived from a fatty acid of soybean oil, canola oil, or linseed oil.

19. The film-forming composition of claim 1 wherein the dispersed

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or continuous aqueous phase further comprises an additive selected from the group consisting of wetting aids, dispersants, thickeners, defoaming agents, biocides, algicides, ultra-violet inhibitors, flow agents, levelling agents, reology modifiers, freeze thaw stabilizing agents, Ph modifiers, flash rust inhibitors, and biocides.

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20. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids and the ester comprises at least about 5 wt.% of the mixture.

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21. The film-forming composition of claim 1 wherein the ester is derived from a fatty acid contained in an oil obtained from a plant or animal and the unsaturated fatty acid comprises at least about 25 wt.% of the fatty acid content of the oil.

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22. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil obtained from a plant or animal, and the unsaturated fatty acid comprises at least about 25 wt.% of the fatty acid content of the oil.

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23. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil obtained from a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

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24. The film-forming composition of claim 23 wherein the film-forming composition contains at least about 20 wt.% water.

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25. The film-forming composition of claim 23 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-

polymer.

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26. The film-forming composition of claim 1 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

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27. The film-forming composition of claim 26 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer.

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28. The film-forming composition of claim 1 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer.

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29. The film-forming composition of claim 1 wherein the continuous aqueous phase contains less than about 10 wt.% organic solvent.

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30. The film-forming composition of claim 1 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer and the continuous aqueous phase contains less than about 10 wt.% organic solvent.

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31. The film-forming composition of claim 30 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

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32. The film-forming composition of claim 31 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

31 *28*
33. The film-forming composition of claim 30 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

Sub B3
34. A film-forming composition comprising at least about 10 wt.% of a continuous aqueous phase and a dispersed phase, the dispersed phase comprising (i) a particulate polymer or emulsified liquid prepolymer, and (ii) a coalescent aid comprising an ester derived from a fatty acid contained in an oil found in a plant or animal, the ester having the formula RCOOX wherein R and X are independently hydrocarbyl or substituted hydrocarbyl and at least one of R and X comprises at least two unsaturated carbon-carbon bonds.

33 *32*
35. The film-forming composition of claim 34 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer and the continuous aqueous phase contains less than about 10 wt.% organic solvent, based upon the weight of the continuous phase.

34 *33*
36. The film-forming composition of claim 35 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

35 *33*
37. The film-forming composition of claim 36 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

36 *38*
38. The film-forming composition of claim 34 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid

contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

Add A3

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